

USSR

UDC 8.74

BURAK, B. A.

"Problem of Constructing an Adaptive Classifier"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Engineering -- collection of works), Vyp. 10, Moscow, Mashinostroyeniye Press, 1972, pp 165-175 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V663)

Translation: The class of automatic devices using the principle of adaptation when reading information under the conditions of operation of passive noise on the classifier is described. The results of analyzing the devices of the given type are discussed and the procedure for constructing them is described. It is demonstrated that devices constructed by the given procedure permits us to increase the probability of isolation of the useful information with maximum noise level in the cell and at the same time to decrease the error probability when describing the incoming information.

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USSR

BURAK, B. A.

UDC 8.74

"On the Problem of Constructing an Adaptive Classifier"

V sb. Avtomat. upr. i vychisl. tekhn. (Automatic Control and Computer Technology -- Collection of Works), No. 10, Moscow, "Mashinostroyeniye", 1972, pp 165-175 (from RZh-Matematika, No 9, Sep 72, Abstract No 9V663)

Translation: A class of automatic devices using the principle of adaptation in reading information when passive noises are acting on the classifier is described. A device of this type is analyzed and the technique for constructing them is described. It is shown that devices constructed by this technique can increase the probability of discrimination of useful information under maximum noise levels in a cell and at the same time reduce the probability of error in describing the incoming information. Authors abstract.

USSR

UDC 654.034.5

BURAK, B.A., LEBEDEV, V.I., and PLOTNIKOV, V.N., Moscow Higher Technical
~~College~~ Imeni N.E. Bauman

"Some Problems in Selecting Criteria in the Task of Pattern Recognition"

Leningrad, Priborostroyeniye, No. 5, 1971, pp 66-70

Abstract: The task of selecting informative criteria is a bottleneck in the theory of pattern recognition because of the lack of an adequate mathematical apparatus. Estimates which are used in information theory do not take into consideration the specific features of pattern recognition. The authors of the present article assume that the criteria being used are mutually statistically independent and that their individual probability distributions are normal and have the same parameters. By applying these assumptions to two commonly used estimates, they obtain formulas for a combined estimate of the statistical distributions and for the probability of an error in recognition. The use of these formulas gives a rough estimate of the required number of inputs of a recognition automaton. The authors emphasize that this method of selecting criteria is only approximate, and its effectiveness is also limited by the assumption of normal probability distributions.

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USSR

GRIGOLYUK, E. I., BURAK, Ya. I., PODSTRIGACH, Ya. S.

"The Statement and Solution of One Class of Extreme Problems of Thermoelasticity for Envelopes of Rotation"

Teoriya Platin i Obolochek [Theory of Plates and Envelopes -- Collection of Works], Moscow, Nauka Press, 1971, pp 66-73, (Translated from Referativnyy Zhurnal, Mekhanika, No 4, 1972, Abstract No 4 V158 by the author's).

Translation: The optimal temperature fields are defined in envelopes of rotation which, within fixed limitations on temperature field and stress-strain state, provide a comparatively low level of thermal stresses. Using the methods of the calculus of variations, the statement and solution of these problems can be reduced to analysis of non-classical problems on the conditional extreme, when the limitations on permissible functions (heating conditions) are fixed not for the entire area of the envelope, but for a system of non-intersecting subareas and contours. In this case, the condition of the minimum integral measure of the thermoelastic state -- a functional of the elastic energy of the envelope -- is used as an integral condition of optimality.

The Euler equations produced, together with the solution equations and boundary conditions, make up a complete set of equations for determination

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GRIGOLYUK, E. I., BURAK, Ya. I., PODSTRIGACH, Ya. S., Teoriya Plastin i Obolochek, Moscow, Nauka Press, 1971, pp 66-73.

of the extreme temperature fields and the corresponding thermal-elastic state of the envelope. Supplementary equations are produced for the characteristic particular forms of extreme problems for direct determination of the extreme temperature fields. 7 Biblio. Refs.

2/2

USSR

UDC 539.377

BURAK, Ya. I., BUDZ, S. F. (Physico-Mechanical Institute of Academy of Sciences Ukr SSR) (Kiev)

"Maximum Temperature Fields with Local Heating of Orthotropic Shells of Revolution"

Kiev, Prikladnaya Mekhanika, Vol 7, No 10, Oct 71, pp 48-56

Abstract: The variational problem of determining the optimal axisymmetrical temperature fields in orthotropic shells of revolution is considered. The appropriate Euler equation is derived, which together with solving equation of the problem constitute a complete system of equations for determining the extremum temperature field and the corresponding stresses and strains in the shell. A numerical analysis of the obtained solution is applied to the cases of conical and cylindrical shells under simplest conditions of local heating. The results show that maximal annular stresses on the inner and outer shell surfaces monotonously decrease with increasing heating area, while axial stresses on the outer surface increase from zero up to a certain value with increasing heating area.

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USSR

UDC 539.31

BURAK, Ya. I.

"On the Study of Stress Concentration in Elastic Dielectrics"

V sb. Kontsentratsiya napryazh. (Stress Concentration--collection of works), Vyp. 3, Kiev, "Nauk. dumka", 1971, pp 15-20 (from RZh-Mekhanika, No 10, Oct 71, Abstract No 10V2)

Translation: A system of equations which describes the interaction of mechanical, thermal and electromagnetic processes in an elastic isotropic dielectric is derived within the framework of fluid mechanics by the methods of thermodynamics of irreversible processes. The process of magnetization is disregarded. Taken as determining parameters of state in addition to temperature (entropy) are the macroscopic tensor characteristics of the distribution of electric charges and mass in a polarized dielectric (tensors of polarization and deformation) and the corresponding tensor characteristics of force effects. The resultant equations of state take account of the effect of interaction of the given processes in the linear approximation. A closed system of equations of the problem and the boundary conditions are found in this formulation. Author's abstract.

1/1

Stress Analysis and Stability Studies

USSR

UDC 539.377

BURAK, YA. I., ZOZULYAK, YU. D., Physicomechanical Institute,
Academy of Sciences, Ukrainian SSR (L'vov)

"Extremal Temperature Fields and Stresses in the Case of Local
Heating of a Spherical Shell"

Kiev, Prikladnaya Mekhanika, Vol 6, No 12, Dec 70, pp 74-81

Abstract: The article deals with the problem of determination, in a closed spherical shell, of the optimal temperature fields which, within the limits of given conditions of axisymmetrical local heating, provide a comparatively low level of temperature stresses. The condition of the minimum of the functional of the elastic energy of the shell is adopted as the criterion of optimality. The optimal temperature fields and the temperature stresses corresponding to them are studied in order to find the simplest form of the conditions of local heating of the equatorial region. 3 figures, 5 bibliographic entries.

1/1

1/2 029 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--INFLUENCE OF THE TEMPERATURE FIELD PROFILE ON THE RELAXATION OF
RESIDUAL STRESSES DURING LOCAL HEATING OF RING SHAPED WELDS -U-
AUTHOR-(05)-PODSTRIGACH, YA.S., GORIACHEVA, Z.I., BURAK, YA.I., BESEDINA,
L.P., KAZAKOVA, L.A.
COUNTRY OF INFO--USSR

SOURCE--FIZIKO KHIMICHESKAIA MEKHANIKA MATERIALOV, VOL. 6, NO. 1, 1970, P
42-45
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, MATERIALS

TOPIC TAGS--RESIDUAL STRESS, METAL RING, THERMAL STRESS, WELD JOINT,
STRESS RELAXATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1995/0936

STEP NO--UR/0369/70/006/001/0042/0045

CIRC ACCESSION NO--AP0116445

UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116445

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. STUDY OF THE DEPENDENCE OF THERMAL STRESSES ON THE TEMPERATURE FIELD PROFILE DURING LOCAL AXISYMMETRICAL HEATING OF RIGID CYLINDRICAL SHELLS. THIS PROBLEM REDUCES TO THE DETERMINATION OF TEMPERATURE FIELDS WHICH, AT A GIVEN TEMPERATURE LEVEL AND WIDTH OF THE HEATING ZONE, GUARANTEE A RELATIVELY LOW LEVEL OF MAXIMUM STRESSES. AN EXPERIMENTAL STUDY IS MADE OF THE USE OF EXTREMUM TEMPERATURE FIELDS FOR LOCAL STRESS RELIEF OF RING SHAPED WELDS.
FACILITY: AKADEMIIA NAUK UKRAINSKOI SSR, FIZIKO MEKHANICHESKII INSTITUT, LVUV, UKRAINIAN SSR.

UNCLASSIFIED

USSR

Aeronautical and Space

UDC 533.6.011

BURAKOV, I. I., ZHILIN, YU. I.

"Thin Bodies of Rotation with Minimum Wave Drag"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aero-hydrodynamic Institute), 1970, Vol 1, No 6, pp 108-112 (from RZh-Mekhanika, No 11, Nov 71, Abstract No 11B193)

Translation: The variation problem of constructing the generatrix of a thin body of rotation (with and without a channel) having minimum wave drag in a supersonic flow was investigated within the framework of linear theory. In addition to the coordinates of the initial and terminal points of the body, the position of an arbitrary number of internal points through which the desired contour must pass and also the volume of the body can be given. The solution was found by the method of transfer to a control outline as a result of which the investigated problem reduces to determining the optimal potential distribution $\phi(r)$, where r is the distance from the axis of symmetry, in the characteristic of the second set bounding the region of determinancy of the desired generatrix on the right. For determination of the potential on the indicated characteristic, more correctly, for the distribution of the derivative $\phi'(r)$, a finite formula is obtained. Utilization of the indicated

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BURAKOV, I. I., et al., Uch. zap. Tsentr. aero-gidrodinam. in-ta, 1970, Vol 1, No 6, pp 108-112

formula requires calculation of certain quadratures which are expressed in terms of elementary functions for a body of rotation without a channel. Examples of optimal bodies with a channel are presented for the case where the generatrix of the desired body passes through three given points: two terminal points and one point in the middle cross section. The indicated bodies are more "filled" than the combination of right and inverted truncated cones. Here, the gain with respect to the wave drag coefficient (by comparison with the body the outline of which is formed by a parabola passing through the same three points) is 16-24%.

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Acc. Nr:

AP0046111

Abstracting Service:
CHEMICAL ABST.

Ref. Code:

U R O 3 6 5

92800y Chemical nickel-molybdenum coating from an ammonium citrate solution. Rozenblyum, R. G.; Burakov, M. R.; D'vakov, A. A.; Burakova, E. A.; Efimova, M. M. (Sverdlovsk Nauch.-Issled. Inst. Khim. Mashinost., Sverdlovsk, USSR). Zashch. Metal. 1970, 6(1), 76-8 (Russ). Ni-Mo or Ni-Mo-P were deposited from solns. contg. Na citrate 47, and NH_4Cl 30 g/l.; the pH was 8-9. Best results were obtained with solns. contg. NiCl_2 and NaH_2PO_4 20 g/l. and solns. contg. 10 and 20 g/l. of the 2 salts, resp. The amt. of Mo in the deposit increased with its content in the plating soln. and with a decrease of Ni in the same soln. The max. concn. of Mo in the deposit was 8-10%. The deposits contg. P did not crack even if they were 50 μ thick, whereas Ni-Mo deposits cracked when they were appreciably thinner.

M. Hoseh

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REEL/FRAME

19781188

18

USSR

UDC: 621.373.531.1

BURAKOV, O. N., TISHENKO, A. M., SHTERK, M. D.

"Temperature Stabilization of the Pulse Duration of Multivibrators Based on Silicon Transistors"

V sb. Poluprovodn. pribory v tekhn. elektrosvyazi (Semiconductor Devices in Technical Electrical Communications--collection of works), Moscow, "Svyaz'", 1970, pp 167-170 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1G223)

Translation: The authors discuss a method of controllable stabilitron compensation of temperature changes in the pulse duration of multivibrators based on silicon transistors. An analysis is made and recommendations are given which can be used in designing multivibrators both in classical circuitry and on composite transistors. Experimental data are given. Bibliography of one title. Resumé.

1/1

USSR

UDC 621.378.32

BURAKOV, V. S., BOKHONOV, A. F., and ZHUKOVSKIY, V. V., Institute of Physics,
Academy of Sciences of the Belorussian SSR

"Determining the Parameters of a Ruby Laser by the Time Characteristics of the
Discharge"

Minsk, Vestsi Akademii Navuk BSSR, Series on Physical-Mathematical Sciences,
No 473, pp 73 - 76

Abstract: In optimizing laser operation, it is useful to know the coefficient of maximum amplification of the active elements, the coefficient of internal losses, and the absolute value of the rate of optical pumping. Several techniques have been suggested for determining these values, but the majority of these methods are based on measuring the energy values of the laser at the threshold of discharge or during discharge. Such measurements are subject to large experimental error, while methods based on measuring the time characteristics of the discharge are more promising. In ZhPS, Volume 3, page 171, Burakov, Zhukovskiy, and Samson reported the results of determining the parameters of a neodymium laser from the discharge start time. Similar techniques have now been applied to the ruby laser, although different methods of treating the results of the measurements were required. The investigation was also extended to cover another important time characteristic, the lag interval of the laser pulses.

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USSR

BURAKOV, V. S., et al., Minsk, Vestsi Akademii Navuk BSSR, Series on Physical-Mathematical Sciences, No 473, pp 73 - 76

The frequency of laser pulsation is found to be a linear function of the useful loss value, so that this frequency can be used to determine the probability of pumping radiation and the coefficient of maximum amplification. If the coefficient of amplification is known, the maximum probability of radiation and the coefficient of internal losses can be determined from the data of laser discharge build-up time. In a number of cases it is possible to combine both methods to determine these laser parameters accurately.

2/2

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USSR

UDC 621.378:533.9

BURAKOV, V. S., MAUMENKOV, P. A., IVANOV, V. P., and KOLOSOVSKIY, G. A.

"Study of the Passage of High-Power Laser Radiation Through an Optically Dense Plasma"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 16, No 2, Feb 72, pp 239-242

Abstract: The article describes results of an experimental study of the passage of ruby-laser radiation (density $10^6 - 5 \cdot 10^8$ w/sq cm, duration $3 \cdot 10^{-8}$ sec) through a quasistationary plasma with a temperature of 3-4 ev and a comparatively high absorption coefficient ($4 - 7 \text{ cm}^{-1}$). Nonlinear phenomena were found during the passage of the laser radiation through the plasma: viz., bleaching and an increase in the absorptivity of the plasma. The mechanism of the observed plasma bleaching is discussed.

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1/2 014 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--FORMATION OF RESINOUS STRUCTURES IN RUBBERS DURING VULCANIZATION
AND THEIR EFFECT ON REINFORCEMENT -U-
AUTHOR--(04)--BURAKOVA, N.N., EPSHTEYN, V.G., YEMELYANDV, D.P., BABYUK, D.N.
COUNTRY OF INFO--USSR
SOURCE--KOLLOIDNYY ZHURNAL, 1970, VOL 32, NR 3, PP 337-341
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--MOLECULAR STRUCTURE, FORMALDEHYDE, POLYMER CROSS LINKING,
RUBBER, VULCANIZATION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--2000/2152 STEP NO--UR/0069/70/032/003/0337/0341
CIRC ACCESSION NO--AP0125735
UNCLASSIFIED

2/2 014

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125735

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE POSSIBILITY HAS BEEN STUDIED OF THE FORMATION OF RESINOUS STRUCTURES IN RUBBER DURING VULCANIZATION AS THE RESULT OF INTERACTION OF PHENOLIC RESINS (RESORCINOL FORMALDEHYDE OR LIGNIN) WITH RESOTROPIN. IN THIS CASE RUBBER REINFORCEMENT DEPENDS ON THE AMOUNT OF RESIN FORMING COMPONENTS IN THE MIX. ADDITION OF A RESIN FORMING SUBSTANCE (RESOTROPIN) MIXED WITH SMALL AMOUNTS OF RESIN ENSURES THE FORMATION DURING VULCANIZATION OF SECONDARY CHAIN STRUCTURES FROM RESIN PARTICLES AS THE RESULT OF THEIR CHEMICAL COMBINATION.
FACILITY: YAROSLAVSKIY TEKHNOLGICHESKIY INSTITUT.

UNCLASSIFIED

1/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT70

TITLE--SYNTHESIS OF POLYCARBONATES MODIFIED WITH SILICON -U-

AUTHOR--(05)--SMIRNOVA, G.V., SIDNEV, A.I., BURAKOVA, I.P., KOROVINA, YE.V.,
KOLESNIKOV, G.S.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN. SER. A 1970. 12(4). 917-21. *B*

DATE PUBLISHED--70

SUBJECT AREAS--CHEMISTRY, MATERIALS

TOPIC TAGS--HYDROXYL RADICAL, BENZENE DERIVATIVE, PROPANE, PHOSGENE,
ORGANOSILICON COMPOUND, POLYCARBONATE RESIN, POLYSILOXANE, ELASTICITY,
THERMAL STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRA--2000/0665

STEP NO--UR/0459/70/012/004/0917/0921

CIRC ACCESSION NO--AP0124337

UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--30OCT7

CIRC ACCESSION NO--AP0124337

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE REACTION OF
2,2,BIS(4, HYDROXYPHENYL)PROPANE WITH COCL SUB2, ME SUB2 SICL SUB2, OR
THEIR MIXTS. IN PYRIDINE, CH SUB2 CL SUB2 GAVE, RESP., A CRYST.
POLYCARBONATE (I), POLYSILOXANES, OR AMORPHOUS MODIFIED I (II). THE
INCREASE OF SI CONTENT IN II INCREASED ITS ELASTICITY BUT DECREASED THE
MELT FLOW TEMP. AND THERMAL STABILITY. FACILITY: MOSK. KHIM.
TEKHNOL. INST. IM. MENDELEEVA, MOSCOW, USSR.

UNCLASSIFIED

Acc. Nr:

AP0046111

Abstracting Service:
CHEMICAL ABST.

Ref. Code:

URO365

92800y Chemical nickel-molybdenum coating from an ammonium citrate solution. Rozenblum, R. G.; Burakov, M. R.; D'vakov, A. A.; Burakova, E. A.; Efimova, M. M. (Sverdlovsk. Nauch.-Issled. Inst. Khim. Mashinostr., Sverdlovsk, USSR). *Zashch. Metal.* 1970, 6(1), 76-8 (Russ). Ni-Mo or Ni-Mo-P were deposited from solns. contg. Na citrate 47, and NH₄Cl 30 g/l.; the pH was 8-9. Best results were obtained with solns. contg. NiCl₂ and NaH₂PO₄ 20 g/l. and solns. contg. 10 and 20 g/l. of the 2 salts, resp. The amt. of Mo in the deposit increased with its content in the plating soln. and with a decrease of Ni in the same soln. The max. concn. of Mo in the deposit was 8-10%. The deposits contg. P did not crack even if they were 50 μ thick, whereas Ni-Mo deposits cracked when they were appreciably thinner. M. Hoseh

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REEL/FRAME

19781188

18

1/2 029 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--REMOTE RESULTS OF SURGICAL TREATMENT OF INTERVENTRICULAR SEPTAL
DEFECTS -U-
AUTHOR--(03)-SOLOVYEV, G.M., BURAKOVSKIY, V.R., KAKULINA, N.M.
COUNTRY OF INFO--USSR
SOURCE--KARDIOLOGIYA 10(1): 44-52, 1970 B
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--HEART SURGERY, RADIOGRAPHY, ELECTROCARDIOGRAPHY,
PHONOCARDIOGRAPHY, HEMODYNAMICS, HYPERTENSION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3004/0548 STEP NO--UR/0495/70/010/001/0044/0052
CIRC ACCESSION NO--AP0131171
UNCLASSIFIED

2/2 029

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0131171

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PATIENTS (110) AT PERIODS FROM 1-7 YR AFTER THE OPERATION FOR ISOLATED INTERVENTRICULAR SEPTAL DEFECT WERE EXAMINED. APART FROM ROENTGENOLOGICAL ECG AND PHONOCARDIOGRAPHIC INVESTIGATIONS, 47 PATIENTS WERE SUBJECTED TO CATHETERIZATION OF RIGHT REGIONS OF THE HEART. IN 85.4PERCENT OF PATIENTS THERE WERE GOOD RESULTS WITH PRACTICAL RECOVERY IN MOST CASES. UNFAVORABLE RESULTS WERE DUE TO OPERATIVE AND POSTOPERATIVE COMPLICATIONS: COMPLETE TRANSVERSE BLOCK, RECANALIZATION OF THE DEFECT, AND TRAUMATIC AORTIC INCOMPETENCE. NORMALIZATION OF THE HEMODYNAMICS WAS ALSO OBSERVED IN PATIENTS WITH HIGH PULMONARY HYPERTENSION IN ITS HYPERKINETIC FROM. A COMPARATIVE EVALUATION OF THE REMOTE RESULTS OF OPERATIONS PERFORMED WITH DIFFERENT APPROACHES DEMONSTRATES THAT EACH APPROACH HAS ITS RELATIVE MERITS AND SHORTCOMINGS. THE TRANSATRIAL APPROACH IS ESPECIALLY VALUABLE WHEN OPERATING ON PATIENTS WITH HIGH PULMONARY HYPERTENSION.
FACILITY: INST. CARDIOVASC. SURG., ACAD. MED. SCI. USSR, MOSCOW, USSR.

UNCLASSIFIED

1/2 . 027 UNCLASSIFIED PROCESSING DATE--23OCT70
TITLE--STABILITY OF ROTATIONAL MOTIONS OF A SYMMETRICAL SOLID BODY ON A
VIBRATING BASE IN A POTENTIAL FORCE FIELD -U-
AUTHOR--BURALKHIYEV, S. *B*
COUNTRY OF INFO--USSR
SOURCE--AKADEMIIA NAUK KAZAKHSKOI SSR, VESTNIK, VOL. 26, JAN. 1970, P.
36-40
DATE PUBLISHED----JAN70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--MOTION STABILITY, ROTATION, AXISYMMETRIC BODY, GEOPOTENTIAL
FIELD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1983/1633 STEP NO--UR/0031/70/026/000/0036/0040
CIRC ACCESSION NO--AP0054479
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0054479

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DERIVATION OF STABILITY CONDITIONS FOR A SOLID BODY MOUNTED ON A PLATFORM AND ROTATING AT A CERTAIN ANGULAR VELOCITY ABOUT A DYNAMIC SYMMETRY AXIS WHICH COINCIDES WITH A PERPENDICULAR TO THE PLATFORM. ASSUMING THAT THE BODY IS LOCATED IN A POTENTIAL FORCE FIELD, A SUFFICIENT CONDITION OF STABILITY AND A CONDITION OF INSTABILITY ARE DERIVED FOR THIS BODY.

UNCLASSIFIED

Thin Films

USSR

UDC 669.1:539.216.2

KAZAKOV, V. G., KARABANOVA, V. P., BURAVIKHIN, V. A., SVETSOV, M. M.,
P'YAVCHUK, N. N., and IVANOV, V. A., Irkutsk State Pedagogical Institute

"Effect of Elastic Stresses on Critical Fields of Thin Ferronickel Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 33, No 4, Apr 72, pp 864-866

Abstract: A study was made of the behavior of the coercive force H_c of thin magnetic ferronickel films under the action of stresses, since H_c essentially affects the quasi-static and pulsed remagnetization processes. The value of H_c in most cases is determined by the field of starting boundaries. Thus, dependence of H_c boundaries on the magnitude of elastic stresses in 75% Ni and 25% Fe films of different thicknesses (450, 800 and 1100 Å) was experimentally investigated. The results are discussed by reference to diagrams showing the deformation dependence of the starting field of domain boundaries (H_{st}) and the width of the domain boundary. The dependence of H_{st} on the magnitude of applied stresses can be explained by the character of

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USSR

KAZAKOV, V. G., et al., Fizika Metallov i Metallovedeniye, Vol 33, No 4,
Apr 72, pp 864-866

structural changes of domain boundaries. Three illustrations, six
bibliographic references.

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USSR

UDC 538.2

BURAVIKHIN, V. A., KARASOV, P. I., KAZAKOV, V. G., and ANUFRIYEV, V. S.,
Irkutsk Pedagogical Institute

"Effect of Stresses on Pulsed Remagnetization of Thin Nickel-Iron Films"

Sverdlovsk, Fizika Metallov i Metallovedeniye, Vol 31, No 4, Apr 71, pp 739-744

Abstract: The effect of elastic stresses on the remagnetization time (τ), the switching factor, and the change in character of pulsed remagnetization processes was experimentally investigated by a method in which the stress intensity could be varied continuously. The remagnetization was carried out on 20% Fe-80% Ni films $\sim 1500 \text{ \AA}$ thick by a constant amplitude value of the remagnetizing impulse (H_g) and various strain values (ϵ). The results are analyzed by reference to oscillograms of the longitudinal signal of remagnetization, the domain structure of the investigated film, and diagrams showing effects of stresses and $1/\tau$ dependences on H_g at various ϵ . Six figures, seven bibliographic references.

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USSR

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KAZAKOV, Y. A., ~~CHIRIKOVA~~, Y. A., SUSHKOV, A. G., and ~~CHIRIKOVA~~, Y. A., ~~CHIRIKOVA~~
Pedagogical Institute; Moscow State University Institute of Physics

"Influence of Elastic Stresses on Slipping at Interdomain Boundaries in Iron-Nickel
Films"

Sverdlovsk, ~~Chirikova~~ Y. A. and ~~Chirikova~~ Y. A., ~~Chirikova~~ Y. A., Vol 30, No 4, May, 1984, p. 115-116

Abstract: The slipping rate is studied at interdomain boundaries in iron-nickel
films as a function of the elastic stresses applied. It is established that
stresses resulting in an increase in H_0 of the films lead to a shift in the
curves $V(H_0)$ where H_0 is constant in the effect of high velocity of the
slipping. Both the curves of equal velocities and the critical curves of the
of the boundary correspond in corrected coordinates under the action of

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1/2 016 UNCLASSIFIED PROCESSING DATE--04DEC70
TITLE--SOLUTION FOR POLISHING OPTICAL WINDOWS -U-
AUTHOR--(041)-BURAVLEVA, M.G., SOYFER, L.M., TITOVA, YE.I., SHAKHNOVICH,
M.I.
COUNTRY OF INFO--USSR
SOURCE--U.S.S.R. 261,083
REFERENCE--OTKRYTIYA, IZJBRET., PROM. OBRAZTSY, TOVARNYE ZNAKI 1970,
DATE PUBLISHED--06JAN70
SUBJECT AREAS--MATERIALS
TOPIC TAGS--OPTIC GLASS, OPTIC WINDOW, GLASS PROCESSING, PATENT
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--3007/1747 STEP NO--UR/0482/70/000/000/0000/0000
CIRC ACCESSION NO--AA0136987
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AA0136987

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SOLN. FOR POLISHING OPTICAL
WINDOWS CONTAINED A MIXT. OF HBO SUB3, HCL, H SUB2 O, IN A 1:1:1 RATIO
AND A LIF ADDITIVE SMALLER THAN 1 G-200 CM PRIME3 MIXT. TO INCREASE
TRANSPARENCY.

UNCLASSIFIED

USSR

UDC 536.63

ALESHKEVICH, Yu. V., GOL'DBERG, G. R., BURAVOY, S. Ye., PLATUNOV, Ye. S.

"Installation for Studying Heat Physical Properties of Materials in 50-900°C Temperature Interval"

Priborostroyeniye, No 12, 1971, pp 103-107.

ABSTRACT: An installation is described for studying the heat capacity and temperature conductivity of solids with a heat conductivity λ of 2 to 50 w/m·degree. Measurements are performed with smooth heating of a cylindrical specimen. The total measurement error is not over 5-10%. A photograph and schematic diagram of the device are presented. Errors in the measurement of temperature conductivity generally did not exceed 7%. The basic error components are: errors in determination of spacing R (2%), asymmetrical temperature field of the specimen, errors in graphic differentiation (up to 3%), errors in recording by the electronic potentiometer (1-2%) and others. The author's particularly note the errors developing in the measurement of θ resulting from the inertia of the R and 0 thermocouples. These errors can be reduced by placing the specimen over the thermocouples rather tightly, with a clearance not exceeding 0.03 mm.

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- 155 -

1/2 027 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--THE ANALYTIC METHOD OF CONSTRUCTION THE WAVE OF UNLOADING -U-
AUTHOR--BURAVTSEV, A.I.
COUNTRY OF INFO--USSR
SOURCE--VESTNIK LENINGRADSKOGO UNIVERSITETA, NO 1, MATEMATIKA, MEKHANIKA,
ASTRONOMIYA, 1970, NR 1, PP 93-97
DATE PUBLISHED-----70
SUBJECT AREAS--PHYSICS
TOPIC TAGS--STRUCTURE VIBRATION, VIBRATION ANALYSIS, WAVE PROPAGATION,
APPROXIMATION METHOD, STRESS LOAD
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0391 STEP NO--UR/0043/70/000/000/0093/0097
CIRC ACCESSION NO--AP0055176
UNCLASSIFIED

2/2 027

UNCLASSIFIED

PROCESSING DATE--09OCT70

CIRC ACCESSION NO--AP0055176 .

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE LONGITUDINAL OSCILLATION OF PIVOT WITH THE NON LINEAR DEPENDENCE SIGMA FROM EPSILON IN THE REGION OF LOAD IS THE PROBLEM UNDER CONSIDERATION. THE WAVE OF UNLOADING IS CONSTRUCTED BY THE METHOD OF FOLLOWING APPROXIMATION.

UNCLASSIFIED

USSR

UDC 576.851.511.097.22

BURAVTSEVA, N. P., and KULESHOVA, L. I., Scientific Research Antiplague
Institute of Caucasus and Transcaucasus, Stavropol'

"A Comparative Study of the Sensitivity of Bac. Anthracis to Various
Antibiotics"

Moscow, Antibiotiki, No 11, 1971, pp 1019-1023

Abstract: By means of serial dilutions in broth and agar, 18 strains of Bacillus anthracis were investigated for their sensitivity to penicillin, ampicillin, methycillin, oxacillin, streptomycin, kanamycin, neomycin, tetracycline, levomycetin (chloramphenicol), novobiocin, erythromycin, oleandomycin, lincomycin, vancomycin, and viomycin (florimycin). All 18 strains are sensitive to all of the above antibiotics except viomycin. However, in agar, the MIC of benzylpenicillin is 156 times higher and that of ampicillin and methycillin six times higher than in broth. Bacillus anthracis produces a penicillinase. Therefore, when the inoculation dose is 50 times bigger, the sensitivity of all but three strains to benzylpenicillin and ampicillin is 25-100 times smaller and to methycillin and oxacillin 2-10 times smaller. However, since the sensitivity of the three exceptional strains (1, 1051/35, and 3/45) to methycillin and oxacillin decreases 21-127 times even though they produce equal amounts of the penicillinase, it is inferred that the resistance of Bac. anthracis to these antibiotics is determined by more factors than just the inoculation dose.

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Acc. Nr.: AR0113849

Ref. Code: UR0000

USSR

UDC: 622.778:553.31

KARMAZIN, V. I., KHVATOV, Yu. A., BURAYEV, B. K., DENISENKO, A. I.

"Concerning the Possibility of Including the Operation of Dry Magnetic Separation Into the Systems of Crushing and Concentration Factories of the Mining and Concentration Combines of the Krivbass"

Obogashcheniye Poleznykh Iskopayemykh. Respublikanskiy Mezhvedomstvennyy Nauchno-Tekhnicheskiy Sbornik (Concentration of Useful Minerals. Republic Interdepartmental Scientific and Technical Collection of Works), No 5, 1969, pp 19-24 (from Referativnyy Zhurnal, Metallurgiya, No 1, 1970, Abstract No 1V97)

Translation: The possibilities are considered, and the experimental data are cited, with regard to the extraction of large (25-0mm) dry tails from crushed magnetite ore prior to its pulverization and concentration. This makes it possible, at the mining and concentration combines of the Krivbass, to increase the concentration of magnetite iron in granulated ore by 2-3%,

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Acc. Nr.: AR0113849

reduce the edge content of magnetic iron in the ore, and thereby perceptibly increase its balance reserves, increase the productivity of the concentration factories by 3-5%, and to increase the volume of output of commercial concentrates by 1-1.75 million tons per year for the conditions of the Krivbass.

eo

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Reel/Frame
19931024

USSR

UDC 621.359.7.001.5

BURAYEV, T. K., and VERESHCHAGIN, I. P., Moscow

"Physical Processes Involved In the Atomization of Liquids in an Electric Field"

Moscow, Energetika i Transport, No 5, Sep-Oct 71, pp 70-79

Abstract : The atomization process of a liquid from the capillary in an electric field was experimentally investigated. From droplet photographs obtained by light pulse, characteristics of droplet deformation on the capillary end were examined. Calculations and experiments revealed that the stability loss of the droplet surface in location of its maximum curvature and the throw-out of a thin small jet are required conditions for a fine-dispersed atomization in the electric field. From a derived equation the value of the relation b/a of an assumed ellipsoidal droplet (a and b are the semi-axes of the ellipsoid) at which the stability loss occurs can be determined for initial values of b and the uniform field intensity by absence of the semi-ellipsoid. Limiting values were determined of the surface tension coefficient of conducting liquids above which the atomization is impossible because of developing corona discharge on the surface of the liquid. Five illustr., four tables, 21 formulas, ten biblio. refs.

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1/2 024 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--THE INFRARED SPECTROSCOPIC STUDY OF SOLID SOLUTIONS IN THE Y SUB2
SI SUB2 O SUB7-Y SUB2 GE SUB2 O SUB7 SYSTEM -U-
AUTHOR-(04)-SHEVYAKOV, A.M., TARLAKOV, YU.P., SOKOLOV, A.N., BURBA, A.A.
COUNTRY OF INFO--USSR
SOURCE--ZH. PRIKL. SPEKTROSK. 1970, 12(2), 345-6
DATE PUBLISHED-----70
SUBJECT AREAS--MATERIALS, PHYSICS
TOPIC TAGS--SOLID SOLUTION, IR SPECTROSCOPY, YTTRIUM COMPOUND, GERMANIUM
COMPOUND, METAL OXIDE
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1995/0928 STEP NO--UR/0368/70/012/002/0345/0346
CIRC ACCESSION NO--AP0116438
UNCLASSIFIED

2/2 024

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0116438

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE IR SPECTRA OF Y SUB2 GE SUBN SI SUB1(2NEGATIVE N) O SUB7 (I), WHERE N EQUALS 2, 1.6, 1.4, 1.2, 1.18, 1.08, 0.6, 0.4, 0.3, 0.1, 0.06, AND 0 AND OF ALPHA PRIME-Y SUB2 SI SUB2 O SUB7 (II) WERE RECORDED. SAMPLES OF THE SOLID SOLNS. WERE PREPD. FROM PURE OXIDES BY MEANS OF SOLID PHASE SYNTHESIS AT 1350DEGREES WITH COMBINATION OF ROASTING AND WET GRINDING. COMPARISON OF THE IR SPECTRA OF I WITH N EQUALS 0.4-1.18 AND II SHOWED SIMILARITY IN THE STRUCTURES OF THESE COMPOS. AND CONFIRMED CRYSTALLOPTIC ANAL. DATA CONCERNING THE REGION OF HOMOGENEITY OF THE SYSTEM.

UNCLASSIFIED

USSR

UDC 636+576.8.094.29

BURBA, L. G., All-Union Institute of Experimental Veterinary Medicine, Moscow

"Morphogenesis of African Swine Fever"

Moscow, Sel'skokhozyaystvennaya Biologiya, No 6, 1971, pp 916-921

Abstract: Pathological and anatomical changes were studied in 34 young pigs 6, 12, 18, 24, 36 hours and 2, 3, 4, 5, 6, and 7 days after they received an intramuscular injection of African swine fever virus (Lisbon strain). Specimens were taken from the lymph nodes, spleen, heart, lungs, liver, kidneys, adrenals, stomach, intestine, thyroid, femur, sternum, hypophysis, brain, spinal cord, and other organs for histological study. The disease sets in acutely and develops rapidly, producing severe lesions of the blood vessels, hemorrhagic diathesis, degenerative, necrotic, and inflammatory changes, especially in organs rich in lymphoid tissue. African swine fever virus has an affinity for lymphoid tissue and endothelial cells of the blood vessels. Karyorrhexis is an early histological sign of the disease. The pathological process develops in stages. The first two days are marked by proliferative changes. Thereafter exudative changes are prominent with marked circulatory disorders and degenerative changes in the hematopoietic, internal organs and brain. The main differential diagnostic symptoms are 1/2

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UDC 619:616.981.452-951.45-981.214-91:636.4

BURBA, I. G., Candidate of Veterinary Sciences, All Union Institute of Experimental Veterinary Medicine

"Differential Pathomorphological Diagnosis of African and Classical Swine Fever, Erysipelas, and Pasteurellosis of Swine"

Moscow, Veterinariya, No 2, 1970, pp 46-47

Abstract: The four diseases mentioned in the title have a number of clinical and pathological-anatomical features in common, but they can be differentiated on the basis of the combination of features specific to each. Results of a pathological and morphological examination of gilts experimentally infected with the agents of these diseases are reported. All the animals died. A chart lists a dozen pathological-anatomical features (e.g., hemorrhagic diathesis and hemorrhages into the skin, serous dermatitis, systemic hyperplasia combined with hemorrhagic infiltrations in the lymph nodes, serous pleuritis, pleuropneumonia) and notes whether each is present or absent for the respective diseases and, if present, how pronounced it is likely to be. The pathological findings in various organs and tissues characteristic of the four diseases are given in some detail in a discussion following the chart.

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USSR

UDC 616.981.51-036.21(470.65)

BONDAREV, A. I., TONKONozHENKO, A. P., TSEGoyEVA, V. K., and BURBANOVA, Ye. I.,
Severo-Osetinsk Republican Sanitary Epidemiological Station

"Natural Foci of Anthrax in Northern Osetia"

Moscow, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii, Vol 10, Oct 70,
pp 77-79

Abstract: Anthrax is widespread in the Severo-Osetinsk Autonomous Republic. No settlement in the region is free of this disease. Between 1958 and 1968, there were 239 anthrax cases among cattle and 59 cases among human beings. About 77 percent of these persons had had contact with infected farm animals. In 12 percent of the cases, the source of infection was not established, a fact which indicated that rodents and ectoparasites might carry and transmit the anthrax bacillus. In the present study, 802 rodents and 5,775 Ixodes and Gamasid ticks were examined for the presence of anthrax pathogen. Biotests were performed by injecting emulsions of the internal organs of the rodents and suspensions of the ticks into white mice. Culture media were inoculated with this material and incubated. Studies were made of the internal organs of the rodents and subjected to fluorescence microscopy. The results of all of the tests were negative. Further studies are necessary to establish

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BONDAREV, A. I., et al, Zhurnal Mikrobiologii, Epidemiologii i Immunobiologii,
Vol 10, Oct 70, pp 77-79

definitely the epidemiological and epizootiological significance of anthrax
infections which occur naturally among rodents and ectoparasites.

2/2

- 49 -

1/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--MODELING OF NONHEME IRON COMPLEXES IN BIOLOGICAL MATERIAL -U-
AUTHOR--(02)-BURBAYEV, D.S.E., VANIN, A.F.
COUNTRY OF INFO--USSR *B*
SOURCE--DOKL. AKAJ. NAUK SSSR 1970, 190(6), 1348-50
DATE PUBLISHED-----70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--EPR SPECTRUM, IRON, COENZYME, PROTEIN, MITOCHONDRION
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAE--3005/1573 STEP NO--UR/0020/70/190/006/1348/1350
CIRC ACCESSION NO--AT0133578
UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--20NOV70
 CIRC ACCESSION NO--AT0133578
 ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EPR SPECTRA WERE REPORTED FOR
 BIOL. COMPODS. CONTG. NONHEME-Fe, SUCH AS NADH REDUCTASE COENZYME,
 Fe-BEARING PROTEIN FROM MITOCHONDRIA, FERREDUXIN FROM SPINACH, AND THE
 COMPLEX OF Fe WITH THE SYSTEM OF CYSTEAMINE CYSTEAMINE PERSULFIDE
 (BAYER, ET AL., 1969). FROM THE EXISTING CONCEPTS OF THE MODELS CAPABLE
 OF DESCRIBING THE BEHAVIOR OF Fe IN SUCH SUBSTANCES AND FROM THE
 CURRENTLY REPORTED EPR SPECTRA, IT WAS CONCLUDED THAT YET ANOTHER MODEL
 WAS NEEDED: THAT OF A NITROSYL COMPLEX OF Fe(II) WITH CYSTEINE IN AN
 ALK. AQ. MEDIUM. THIS COMPLEX HAS G SUB1 EQUALS 2.02, G SUB2 EQUALS
 1.99, G SUB3 EQUALS 1.97 AND MEAN G EQUALS 1.99. IT MAY BE RECORDED
 ONLY AT LOW TEMP. THE SUBSTANCE WAS PREPD. BY MIXING FESU SUB4.7H SUB2
 O AND CYSTEINE IN O-FREE WATER, ADJUSTING PH TO 10-11.5 WITH KOH AND
 PASSING NO INTO THIS FOR 3-5 MIN; THEN A FLUSHING WITH AK WAS INITIATED
 AND MAINTAINED THROUGH THE EXPT. FROZEN WITH LIQ. N, SUCH A SOLN. GAVE
 THE SIGNAL WITH G EQUALS 2.03, TYPICAL CF THE NITROSYL COMPLEX OF Fe
 WITH CYSTEINE. CHANGES IN THE SPECTRUM WITH ADDNS. OF Fe WERE SHOWN.
 THE COMPLEX INTERMEDIATE SPECTRUM WAS A COMPOSITE OF 3 SPECTRA,
 DESCRIBED IN DETAIL. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 025 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--THE MECHANISM OF PLASMA LOSSES IN A STELLARATOR -U-

AUTHOR--(C5)-BURCHENKO, P.YA., VASILENKO, B.T., VOLKOV, YE.D., PAVLICHENKO,
G.S., PUTAPENKO, V.A.
COUNTRY OF INFO--USSR

SOURCE--MOSCC, ATOMNAYA ENERGIYA, VOL 28, NO 2, FEB 70, PP 126-129

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--PLASMA OSCILLATION, LOW FREQUENCY, STELLARATOR

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1481

STEP NO--UR/0089/70/028/002/0126/0129

CIRC ACCESSION NO--AP0123384

UNCLASSIFIED

2/2 025

UNCLASSIFIED

PROCESSING DATE--20NOV70

CIRC ACCESSION NO--AP0123384

ABSTRACT/EXTRACT--(U) GP-G- ABSTRACT. A STUDY WAS MADE OF THE EQUILIBRIUM CONDITIONS AND SPECTRAL PROPERTIES OF LOW FREQUENCY OSCILLATIONS OF PLASMA OF OHMIC HEATING IN A STELLARATOR. IT IS SHOWN THAT EQUILIBRIUM IS DISRUPTED AT A MAGNITUDE β EQUALS $8 \pi N k T$ DIVIDED BY H SUBO PRIME² HIGHER THAN SOME CRITICAL β SUBE. ON THE BASIS OF STUDIES OF LOW FREQUENCY OSCILLATIONS CONDUCTED AT β LESS THAN β SUBE, A DEDUCTION CAN BE MADE THAT DRIFT TYPE INSTABILITIES (DRIFT DISSIPATION OR THERMOFORCE) APPEAR IN THE COLLISION PLASMA IN THE STELLARATOR. THE AUTHORS THANK V. F. ALEK SIN AND S. S. MOISEYEV FOR VALUABLE REMARKS, AND A. I. ZHDANOV FOR HELP WITH THE CORRELATION TECHNIQUE.

UNCLASSIFIED

USSR

UDC 620.179.2

FEL'DMAN, L. S., BURCHENKOVA, L. M., ORYSHICH, I. V., and GRECHUKHA, A. V.

"Quality Norms for Welded Joints Made by Spot Resistance Welding"

Moscow, Defektoskopiya, No 6, 1970, pp 126-132

Abstract: Results are presented from statistical processing of data from long-term testing of the quality of electric spot welding, as well as the results of fatigue testing of spot welded joints with various welding defects, various depths of fusion, and spot diameters. The fatigue durability of spot welded joints of D16 alloy with fatigue cracks extending over one-third of the diameter of the welded point decreases as a function of stress levels as follows: internal -- 22-73%, external -- 37-80%. Fatigue cracks arise and develop at the periphery of the welded spot in the thermally affected area. The point of formation and development of fatigue cracks is unrelated to defects already present. A change in the depth of fusion at welded joints between 20 and 80% and a change of the welded spot diameter by $\pm 30\%$ have no significant influence on the fatigue durability of specimens.

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USSR

UDC 621.791.763.1.05:434.669.715

FEL'DMAN, L. S., Candidate of Technical Sciences, BURCHENKOVA, L. M.,
ORYSHICH, I. V., and GRECHUKHA, A. V., Engineers

"Effect of Certain Defects During Point Welding of Aluminum Alloys on
the Fatigue Strength of Joints"

Moscow, Svarochnoye Proizvodstvo, No 10, Oct 70, pp 45-46

Abstract: In order to estimate the effect of point welding defects on the fatigue characteristics of joints welded in D16T alloy, the fatigue strength and viability of welded specimens with defects were measured. Defect types tested included external cracks, internal cracks with length over one-third the diameter of the fused core, internal splashes, and pore penetration. The fatigue strength of point joints of D16T alloy produced by resistance welding was found to be decreased by shrinkage cracks extending over more than one-third the diameter of the welded point. Fatigue cracks are formed and develop around the periphery of the welded spot in the area of heat application. Variations in fusion depth between 20 and 80% and variations in the diameter of the weld nugget by +30% had no significant effect on the durability of welded joints.

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1/2 016 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--SOME PRACTICAL PROBLEMS OF DIAGNOSIS OF ACUTE PANCREATITIS -U-
AUTHOR--BURCHINSKIY, G.I. *B*
COUNTRY OF INFO--USSR
SOURCE--VRACHEBNOYE DELO, 1970, NR 5, PP 33-39
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--PANCREATITIS, DIAGNOSTIC METHODS

CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1727 STEP NO--UR/0475/70/000/005/0033/0039
CIRC ACCESSION NO--AP0129095
UNCLASSIFIED

2/2 016

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0129095

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A CLINICAL CHARACTERISTIC IS PRESENTED OF SEVERAL PECULIARITIES OF THE CLINICAL COURSE OF ACUTE PANCREATITIS AND THE POORLY EXPRESSED SYMPTOM COMPLEX IS EMPHASIZED WHICH MAY BE OBSERVED IN RECURRENT FORMS OF THIS DISEASE. IT IS STRESSED THAT THE CLINICAL SYMPTOM COMPLEX IN ACUTE PANCREATITIS IS CAUSED BY THE LOCAL PROCESS IN THE PANCREAS MAINLY DUE TO ENZYMATIC DIGESTION OF ITS TISSUE AND ALSO DUE TO GENERAL EFFECT OF BLOOD ENZYMES AND ACTIVATION OF THE SYSTEM OF KININES. VASCULAR REACTIONS CAUSED BY THE LATTER OCCUPY A MAJOR PLACE IN THE CLINICAL SYMPTOM COMPLEX. ONE OF THE SIGNIFICANT ELEMENTS IS THE SOLUTION OF THIS PROBLEM EX JUVANTIBUS: HUNGER DIET, APPLYING COLD TO THE EPIGASTRIC REGION, PARANEPHRIC NOVOCAINE BLOCK, ENZYME INHIBITORS (TRASYLGL), PIRYRIDINE DERIVATIVES (METHYL URACIL). THE SYMPTOM COMPLEX IS DESCRIBED IN DETAIL CHARACTERIZED BY ASSOCIATION OF CHOLECYSTITIS AND PANCREATITIS SIGNS. THE POSSIBILITY IS EMPHASIZED OF THE DEVELOPMENT OF SECONDARY PHENOMENA OF CHOLECYSTITIS IN ACUTE PANCREATITIS MAKING DIFFICULT THE DIAGNOSIS OF THE MAIN DISEASE.

UNCLASSIFIED

USSR

UDC:691.327:666.972.52:666.9.015.6

TSULUKIDZE, P. P., BURCHULADZE, Sh. V., MIKASHVILI, Yu. N.

"Influence of Age of Water-Engineering Concrete on Its Strength and Deformation Properties Under Compression"

Moscow, Gidrotekhnicheskoye Stroitel'stvo, No 11, Nov 73, pp 16-18

Abstract: Complex physical and chemical processes occur in the concrete used in dams as it ages, significantly changing its structure. Concrete specimens were taken from several dams in the Georgian SSR at different times following pouring and tested under compression. Cubic specimens and cores were used. Compressive strength was found to increase over the 28-day strength approximately according to the formula

$$R_t = R_{28}(0.14 + 0.59 \log t),$$

where t is the age of the concrete in days. Compressibility was found to increase very slightly with increasing age, in spite of the increasing compressive strength. Modulus of elasticity increases with age, transverse deformation factor decreases. Ultrasonic wave transmission velocity increases.

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BURDA

I.Kh.

UR 0482

Soviet Inventions Illustrated, Section I Chemical, Derwent, &

231099 REINFORCED THERMOPLASTIC TUBES are made by using equipment, which includes an extruder (1), a section for braiding the reinforcing thread (2), and tube-forming head (3), together with the dimensioning attachment, cutter and traction devices (4,5,6 and 7). The improvement over previous designs lies in the rotary equipment which makes the braiding prior to its passing into the extruder to receive its coating of thermoplastic material. A fixed section (16) supports bearings (17) on which the plaiting head (15) rotates. The bobbin of reinforcing thread (24) is fixed to the rotating head. A second, supplementary stationary head (8) carries two fixed bobbins of thread which can slide backwards and forwards as the machine dictates. As the main head rotates around the central mandrel, a weaving motion is achieved.

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The head (15) also contains holes through which the reinforcing thread is threaded and grooves which assist the threads to pass over and under one another to achieve the desired plaiting configuration.

3.12.66. as 1116687/23-5, BURDA, I. Kh. and others.

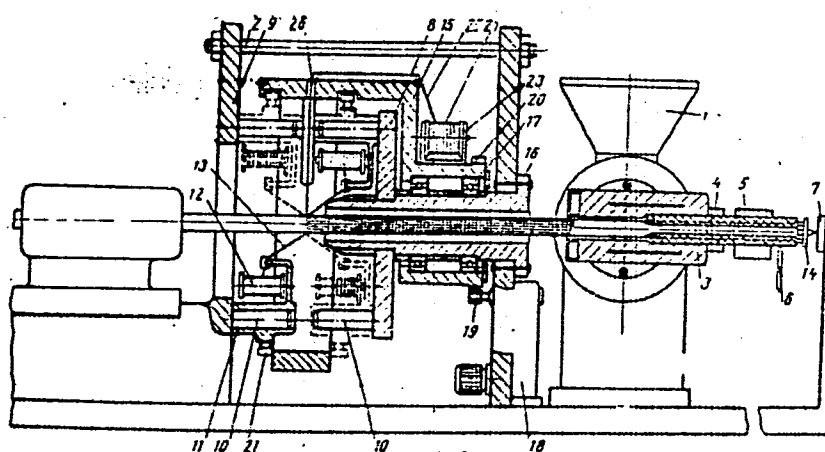
Machines and Tools Ukrainian Res. Inst. (3.4.69)

Bul 35/15.11.68. Class 39a³ Int. Cl. B 29d.

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MW

BURDAK, V. D.

Biology of the Southern Seas

THE HYDRODYNAMIC FUNCTION OF CYCLOID FISH SCALE

UDC 597.951.472.05.001.1

Article by V. D. Burdak, Institute of the Biology of the Southern Seas, USSR Academy of Sciences, Simferopol'; Moscow, Zoological Journal, Moscow, Vol 51, No 7, 1972, pp 1086-1097

The hydrodynamic function of the ktenoid apparatus on fish scale was earlier examined by us (Burdak, 1969, 1970, 1972, 1973, 1974, 1975). It was demonstrated that the microrelief of the cycloid fish scale constitutes a laminar-laminar compound by individual cycloid fish scale construction form of slow fillets (unified interlocking), which are widely used in experimental aero- and hydrodynamics. It was established that a laminar-laminar of such a type is encountered in a rather broad range of Reynolds numbers, approximately from 10^4 to 10^6 . In this connection it is of significant interest to examine the mechanics of controlling cycloid fish scale boundary layer, inasmuch as it is known (Burdak, 1972) the cycloid and ktenoid scales constitute the developmental variations of scales of the one and same elasmoid type fish which, in the determined case of ontogenetic transition from one to the other.

The microrelief of cycloid scale surface was studied by us in examples of 12 fish species: rainbow trout (*Salmo gairdneri* Richard 1880 (L.), river trout (*Salmo trutta labrax* n. turc. (L.), Pike (*Esox lucius* (L.), roach (*Rutilus rutilus* (L.), and perch (*Perca fluviatilis* (L.), chub (*Leuciscus cephalus* (L.), ide (*Leuciscus idus* (L.), tench (*Lepomis microlophus* (L.), golden carp (*Carrasius auratus* (L.), silver carp (*Carrasius auratus* (L.), common carp (*Carrasius auratus* (L.), berride (*Trichurus maculatus* (L.), and ktenoid scale of the bluefish (*Pomatomus saltatrix* (L.)). Adult and semi-adult scales were utilized for the investigation of each type of fish. The scales that were studied were taken only from freshly caught fish and the material was not fixed. The scales were studied under a binocular and a microscope at an effective illumination of lateral reflected light. Simultaneously, the preparations were photographed with the aid of a microphotographic apparatus M-10.

USSR

UDC 597:591.478.7+532.5

RIURDAK V. D., Institute of Biology of the Southern Seas, Academy of Sciences
Ukrainian SSR, Sevastopol

"Hydrodynamic Function of the Cycloid Scales in Fish"

Moscow, Zoologicheskii Zhurnal, No 7, 1972, pp 1,086-1,089

Abstract: Microscopic study of cycloid scales in salmon, roach, carp, and nine other fish species revealed two distinguishing features: (a) longitudinally oriented relief on the surface of the scales and (b) ridges of sclerites. Like the ctenoid apparatus, the cycloid scales or "runoff hollows" (by analogy with the geodesic relief) laminarize the boundary layer. The sclerites act as stiffening ribs. They prevent the trailing edge of a scale from rising by holding it tightly to the plate of the next scale, thereby ensuring the necessary smoothness of the scales as a whole. Together with their surface epithelium, the sclerites function as a damper. In cetaceans, damping is morphologically expressed at the organ level because the damper is the skin which consists of heterogeneous tissues. In fish with elasmoid (i.e., cycloid and ctenoid) scales, on the other hand, damping is accomplished by epithelial tissue and at the cellular level because the main element in the process is the deformation of the epithelial cells.

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USSR

UDC 621.039.53

KUROLINKIN, Ye. I., ~~BURDAKOV, N. S.~~, VIRGIL'YEV, Yu. S., OSTROVSKIY, V. S.,
TURDAKOV, V. N., CHURILOV, Yu. S.

"Influence of Oxidation on Strength Properties of Graphite"

Atomnaya Energiya, Vol 32, No 4, Apr 72, p 312.

Abstract: This short article studies the influence of the degree of oxidation on compressive strength and on volumetric weight, characterized by porosity, for two commercial types of structural graphite, types GMZ and MPG. Studies were performed using cylindrical graphite specimens, 8 mm in diameter and 80 mm long, which were oxidized in an electric furnace in air at 700°C. The degree of oxidation was determined by weight loss of the specimen. It was found that at a 600-800°C oxidation temperature, the drop in volumetric weight occurs primarily in the surface layer. This agrees with the two-stage mechanism of oxidation of graphite, showing that in this temperature interval the process is intermediate between kinetic and diffusion processes. Graphs are presented showing the change in compressive strength and volumetric weight of the graphite with degree of oxidation.

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USSR

UDC: 621.039.531:536.21:661.666

VIRGIL'YEV, Yu. S., BURDAKOV, N. S., MART'YANOV, V. G., and
CHURILOV, Yu. S.

"Change in Heat Conductivity of Graphite Under Radiation"

Moscow, Atomnaya energiya, No. 3, March 1971, pp 311-312

Abstract: By generalizing the available data including that obtained by the authors themselves, this article seeks to find a relationship between the change in heat conductivity of graphite, important as a construction component, and the radiation temperature and dosage. Under irradiation, the heat conductivity drops sharply, with the maximum rate of drop occurring at the initial period of the irradiation and decreasing with increasing radiation temperature. The heat conductivity measurements were made on specimens 8 mm in diameter and 10 mm in height by means of a comparative method in which a standard was used in the temperature interval of 20-120° C, with a measurement accuracy of $\pm 5\%$. Results of the measurements are shown in a curve of the heat conductivity of various brands of Soviet graphite, before and after irradiation, as a function of the temperature. A second curve gives the change in graphite heat resistance as a function of radiation temperature. From their experiments, the authors derive an empirical expression for the change in heat conductivity

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USSR

VIRGIL'YEV, Yu. S., et al, Atomnaya energiya, No. 3, March 1971,
pp 311-312

as a function of the irradiation dosage and temperature, with
the damaging effects on the graphite taken into account.

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USSR

BURDAKOV, S. F., Leningrad

"Effect of Yaw and Drift of a Ship on the Optimal Dynamic Characteristics of the Gyro-vertical with Indirect Correction"

Moscow, Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 135-143

Abstract: This article contains an analysis of the optimal dynamic characteristics of a gyro-vertical with indirect electromagnetic correction installed on a ship undergoing oscillations with respect to the yawing angle. The condition of minimum error dispersion is used as the optimality criterion. The effect of the variable drift angle of the ship and cross coupling between the correction channels on the behavior of the gyro-vertical in the steady state is investigated under defined assumptions. It is noted that in the present paper it is assumed that the yaw of the ship occurs only from inaccuracy of the automatic steering, neglecting the effect of other factors.

The results of the investigation indicate that under the defined assumptions it is possible not to consider the variable drift angle of the ship in

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USSR

BURDAKOV, S. F., Izvestiya Akademii Nauk SSSR, Mekhanika Tverdogo Tela, No 1, January-February 1971, pp 135-143

the equations of motion of the gyro-vertical and to consider the gyro-vertical channels independent. Thus, the magnitude of the yawing angle of the ship only affects the behavior of the channel with respect to one of the two angles between the coordinate systems representing the error of the gyro-vertical.

2/2

USSR

UDC: None

BURDAKOV, S. F., AND CHELPANOV, I. B.

"Optimal Dynamic Characteristics of a Simple Gyrocompass, With Random Vessel Motion and Random Gyroscope Drift Taken Into Account"

Moscow, Mekhanika Tverdogo Tela, No 2, Mar/Apr 70, pp 23-31

Abstract: An analysis is undertaken to arrive at the optimum transfer functions for designing a shipboard gyrocompass. A simple one-rotor gyro is assumed, which is subject to both random motions of the vessel and random precessional torques on the gyro gimbals. Several design variants are considered for a free-running gyro and for the case of correction by means of angular velocity feedback. An additional criterion is that the desired transfer function should result in minimal derived, depending on the type of functional circuit and corrective action that are assumed. It is shown that the optimum transfer function provides design parameters that are independent of the precession rate of the gyro rotor axis, provided that the correct type of velocity feedback is included in the design. A different solution may be obtained for the case in which the interval of gyrocompass use is small relative to the gyrosystem time constant.

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Gyroscopic

USSR

BURDAKOV, S. V., TYUMENEVA, G. V., CHELPANOV, I. B., Leningrad

"Optimal Dynamic Characteristics of a Gyrocompass With Random Perturbations Considering Intercardinal Deviation"

Moscow, Mekhanika Tverdogo Tela, No 5, 1970, pp 5-10

Abstract: The problem of construction of a correcting device which is optimal for the stable mode is formulated and solved for a single-rotor gyrocompass with electromagnetic correction with no stabilization of the sensing element relative to the north-south axis. Random deviating moments acting about the two axes of the gyrocompass, random movement of the ship and random rolling, resulting intercardinal deviation, are considered.

1/1

USSR

UDC 669.721.472(088.8)

YELIN, N. M., BURDAKOV, YU. M., KOLOMIYTSYEV, A. V., CHALABAYEV, I. A.,
KOLYADZIN, A. A., TSIDVINTSEV, G. V., and BIBIK, G. P., Ust'-Kamenogorsk
Titanium-Magnesium Combine imeni 50th Anniversary of October

"Vacuum Ladle"

USSR Author's Certificate No 254104, filed 28 Nov 66, published 5 Jan 70
(from RZh-Metallurgiya, No 11, Nov 70, Abstract No 11 G139 P)

Translation: A design is proposed for vacuum ladle which consists of a lock
and a tap hole. To simplify the servicing of the magnesium electrolytic
reduction cells, it is equipped with a teeming device, which is made in the
shape of a branch connection with bottom closing device mounted on the lid
of the ladle.

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USSR

UDC 632.95

BADULIN, A. V., Chief of the Division of Plant Protection, Volga Scientific Research Institute of Irrigation Agriculture; MURDALAYEVA, T. S., All-Union Scientific Research Institute of Reclamative Afforestation; POPOV, N. A., Chief of the Laboratory of Chemico-Biological Control, Volgograd Disinfection Station; and PONOMARENKO, V. F.

"Studies on Applications of Dibrom"

Moscow, Zashchita Rasteniy, Vol 17, No 6, 1972, pp 32-33

Abstract: Organophosphorus compounds, although highly toxic with respect to their action as insecticides and acaricides, are relatively safe as far as contamination of the environment and accumulation in food products are concerned. The applications of dibrom, which decomposes rapidly and hence does not present any serious danger to the health of human beings, were studied for these reasons. Dibrom is available in the form of a 50% emulsion containing OP-10 as the emulsifier. To test the effectiveness of dibrom against household insects (the common cockroach, bedbugs, and various species of flies including the house, bluebottle, greenbottle, blow, and flesh flies), the insects were placed in contact with a plywood sheet treated with a dibrom emulsion in the amount of 100 g/m². After a 15 min contact with the plywood sheet, the still living insects were removed and observed.

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USSR

—BADULIN, A. V., et al., Zashchita Rasteniy, Vol 17, No 6, 1972, pp 32-33

Dibrom in a concentration of 0.5-1% killed cockroaches in 3-72 hrs, producing an irreversible paralysis in 1 hr. In a concentration of 0.25-0.5% dibrom killed bedbugs in 3-24 hrs and produced paralysis in 10-15 min. In a concentration of 0.5-0.1% / 0.5-1% / it killed all flies in 3-5 min. The surface treated with dibrom remained effective against cockroaches and bedbugs for a period up to 24 hrs and against flies for a period up to 3-4 days. Bait poisoned with 0.25-0.5% dibrom was effective against cockroaches. On being sprayed on plants infested with the insect pests, an 0.15% emulsion of dibrom killed all pea and rose aphids and an 0.1% emulsion all larvae of the fig cicada and of the rose sawfly within 4-5 hrs. An irreversible paralysis was produced within the first few minutes of contact of these insects with dibrom. Larvae of the elm leaf beetle were resistant to dibrom. Dibrom in a concentration of 0.2% was effective against larvae of the fox-colored sawfly. The dibrom emulsions did not burn the plants and preserved their toxicity for 35 days (the time during which observations were carried out) on being kept at 20-23° after preparation.

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USSR

UDC 537.226.33

BURDANINA, N. A., ZOLOTOTRUBOV, YU. S., KAMYSHEVA, L. N., ZHUKOV, O. K., and KOVALENKO, A. N., Voronezh State University imeni Leninskiy Komsomol

"Dielectric Losses in Triglycinesulfate Crystals Subjected to Various Effects"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 9, Sep 71, pp 1943-1946

Abstract: The influence of gamma and x-radiation has been studied previously as it concerns the ferroelectric properties of a triglycine sulfate crystal (TGS). Since the parameter most sensitive to radiation is the tangent of the angle of dielectric losses $\tan \delta$, it can be expected that even small radiation doses will significantly change both the value of $\tan \delta$ and the function $\tan \delta(T)$ for the TGS. In this work the authors study the effect of the amplitude of the measuring field on these same functions. They first study the influence of annealing on the dielectric properties and find that orientation polarization makes a significant contribution to the dielectric permeability of the TGS as a result of heat annealing. The next section is devoted to the influence of the amplitude of the measuring field on samples having different thickness, which is probably determined by the characteristics of the domain structure. Preliminary investigations confirm that the degree of

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USSR

BURDANINA, N. A., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 9, Sep 71, pp 1943-1946

unipolarity in the samples increases as their thickness decreases. The authors then look at the influence of irradiation on the dielectric properties and find that there is a decrease in the dielectric losses in the TGS crystal irradiated with comparatively small radiation doses. The article contains 4 illustrations and 9 bibliographic entries.

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1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--ACCELERATED PROVING GROUND TESTING OF SOME TRUCK ASSEMBLIES -U-

AUTHOR-(04)-BURDASOV, I.YE., KUKHLIN, I.YE., PAVLENKO, V.I., RETSKER, M.I.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, AVTOMOBIL'NAYA PROMYSHLENNOST', NO 2, 1970, PP 23-25

DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR, METHODS AND EQUIPMENT

TOPIC TAGS--AUTOMOBILE, BIBLIOGRAPHY, ENGINE TEST FACILITY, CARGO TRUCK,
HIGHWAY CONSTRUCTION, TEST FACILITY, VEHICLE PROVING GROUND

CENTRAL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/1218

STEP NO--UR/0113/70/000/002/0023/0025

CIRC ACCESSION NO--AP0123182

UNCLASSIFIED

2/2 026

UNCLASSIFIED

PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0123182

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SUMMARY CHARACTERISTICS ARE GIVEN OF SPECIAL PAVED ROADS AND "SHORT WAVE" TYPE ROADS CONSTRUCTED AT THE AUTOMOBILE TESTING RANGE OF NAMI (THE CENTRAL SCIENTIFIC RESEARCH INSTITUTE OF AUTOMOBILES AND AUTOMOBILE ENGINES). RESULTS FROM TESTING TRUCKS ON THESE ROADS ARE GIVEN. THE OBTAINED RESULTS ARE ANALYZED.

UNCLASSIFIED

USSR

UDC 536.25

BURDE, G. I.

"Numerical Study of Nonstationary Convection Arising Under Boundary Temperature Modulation"

V sb. Chisl. metody mekh. splosh. sredy. T. 2 (Numerical Methods of the Mechanics of a Continuous Medium. Vol. 2 -- Collection of Works), Novosibirsk, 1971, pp 16-30 (from RZh-Mekhanika, No 6, Jun 72, Abstract No 6B768)

Translation: The plane convective motion of a viscous fluid in a square region is considered. The temperature of the lower and upper boundaries varies with time according to the relationship

$$T_1 = \theta/2 (1 + \eta \sin \omega t), T_2 = \theta/2 (\pm 1 \pm \eta \sin \omega t),$$

USSR

BURDE, G. I., Chisl. metody mekh. splosh. sredy. T. 2, Novosibirsk, 1971, pp 16-30

where θ is the average temperature difference between the boundaries, ω is the frequency, η is the modulation amplitude. The upper sign corresponds to the case of modulation in phase (a) and the lower sign corresponds to the counterphase (b) and also considered is the case of axisymmetric modulation (c)

$$T_1 = 0, T_2 = -\theta(1 + \eta \sin \omega t).$$

The side boundaries of the square are thermally insulated. All boundaries of the region are assumed to be solid.

Nonstationary nonlinear equations of plane convective motion in the Boussinesq approximation described in variable functions of current, vortex, and temperature were solved by the grid method. An explicit finite-difference scheme was used in which the three-dimensional derivatives were approximated by central differences and the derivatives with respect to time were approximated by differences ahead. The boundaries of the basic region of equilibrium instability for these three cases of boundary conditions are given for different values of the parameters: the Grashof number (defined in terms of θ) and the dimensionless frequencies and amplitudes of the modulation; the

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USSR

BURDE, G. I., Chisl. metody mekh. splosh. sredy. T. 2, Novosibirsk, 1971, pp 16-30

Prandtl number in all calculations $P = 1$. It turns out that in cases (b) and (c) the modulation leads to stabilization so that the greatest effect is achieved at low frequencies. As distinct from this, in case (a), when the temperature gradient averaged over the height does not change with time, the modulation can increase and thus raise the stability of equilibrium. The boundaries of the resonance region of parametric excitation are also given for cases (b) and (c). Steady-state nonlinear vibrational regimes established in the regions of instability were investigated. The amplitude and average intensity of the steady-state convective oscillations are given. Results obtained for different cases of modulation are compared with one another and also with a previously considered case of modulation of the force of gravity caused by vertical oscillations of the plane (Burde, G. I., Izv. AN SSSR. Mekh. zhidkosti i gaza, 1970, No. 2, pp 196-201 -- RZhMekh, 1970, Abstract No 9B812). Ye. M. Zhukhovitskiy.

3/3

BURDE, G. I.

NUMERICAL STUDY OF THE FLOW OF A LIQUID-METAL IN MAGNETOHYDRAULIC PUMPS

[Abstract of a Paper by R. V. Birlch, V. A. Brinman, G. I. Burde, R. K. Gorkh, V. P. Polshchuk, V. I. Yakhushin given at a Magnetohydrodynamic Conference, pp 121-127]

In order to determine the optimal parameters of the structural design of a magnetohydrodynamic pump, it is necessary to have a concept of the nature of movement of the liquid-metal in the zone of effect of the electromagnetic forces. This movement is described by the system of equations of magnetic hydrodynamics. The solution of this system for regions of complex configuration even by numerical methods presents significant difficulties. However, in a number of cases of interest for practical applications, it is possible to introduce some simplifying assumptions.

If the distributions of the magnetic and electric fields are caused only by external sources and do not depend on the movement of the liquid (the inductionless approximation), then the problem can be reduced to the solution of the equations of ordinary hydrodynamics in the given nonuniform force field.

In this approximation a study has been made of the two-dimensional movement of a viscous incompressible liquid in a cross core with a linear decrease in magnitude of the force with respect to both coordinates. The finite-difference equations written for the current and vorticity functions were solved by the iteration method with a successive lower relaxation on a computer.

The nonuniform force distribution in the lateral channel (pocket) leads to the occurrence of turbulence in it. Depending on the force distribution in the core and also the parameters characterizing its configuration, the turbulence in the pocket will to a greater or lesser degree affect the movement of the liquid in the central channel, that is, the pump parameters.

A study was made of the dependence of these parameters (the magnitude of the head Δp and the drag C) on the flow rate of the liquid through the transverse cross section of the central channel (the Reynolds number Re) and the force distribution in the core.

SPRS 60634
27 November 1973

USSR

UDC 621.313.39:538.4

BURDE, G. I., GORN, R. K., YAKUSHIN, V. I.

"Movement of Liquid in MHD-pump with Cross-Shaped Active Zone"

Riga, Magnitnaya Gidrodinamika, No 3, Jul-Sep 72, pp 99-104.

Abstract: The method of finite differences is used to study the motion of a viscous, incompressible fluid in the cross-shaped active zone of an MHD pump. It is assumed that the distribution of the magnetic and electrical fields results only from external sources and is independent of the motion of the liquid (induction-free approximation). In this case, the problem is reduced to solution of equations of ordinary hydrodynamics in a fixed, heterogeneous force field. The finite-difference equations written for the current function and velocity vortex are solved by an iteration method with sequential lower relaxation. The dependence of head and hydraulic resistance factor on fluid flow rate and the distribution of forces in the active zone are studied. A picture of the flow lines with various values of force in the active zone is presented, as well as graphs of the values of head and hydraulic resistance as functions of Reynolds number.

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USSR

UDC 547.466.64 + 577.164.17.074

BURDE, N. L., ALEKSEYEVA, L. V., and ANDREYEVA, N. A., Ural Scientific Center, Academy of Sciences, USSR, Institute of Chemistry

"Synthesis and Study of the Compounds with Potential Biological Activity. XI. Synthesis of Diastereoisomers of Pteroyl- γ -hydroxy-D,L-Glutamic Acid and Their Antifolic Activity"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 9, No 5, May 73, pp 1007-1011

Abstract: The diastereoisomers of pteroyl- γ -hydroxy-D,L-glutamic acid have been synthesized by the method of trigcomponential condensation of 2,4,5-triamino-6-hydroxypyrimidine with α , β -dibromopropionic aldehyde and p-aminobenzoyl- γ -hydroxy-D,L-glutamic acid (threo- or erythro- configuration). Methodology has been developed for the resolution of the diastereoisomers of the latter compound. Comparison of the antifolic activity of γ -hydroxyfolic acid with γ -fluorofolic acids based on the dihydrofolatereductase assay showed the fluoro derivatives to be more active.

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Pharmacology and Toxicology

USSR

UDC 547.466.6

BURDE, N. I., and ALEKSEYEVA, L. V., Ural Scientific Center, Acad. Sc. USSR, Institute of Chemistry

"Synthesis and Study of Compounds with Possible Biological Activity. VIII. Peculiarities of p-Nitrobenzoylation of γ -Substituted Glutamic Acids"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 8, No 8, Aug 72, pp 1587-1591

Abstract: In an attempt to obtain intermedicate products for the synthesis of folic acid derivatives, p-nitrobenzoylation of γ -hydroxy-dialkylamino- and γ -hydroxydialkylaminomethyl derivatives of glutamic acid was studied by the Schotten-Baumann reaction. In the case of the γ -hydroxy-D,L-glutamic acid the reaction takes place at the amino group, leaving the hydroxy group untouched; it involves the closing of the erythro isomer into respective lactone rings. The p-nitro-benzoyl- γ -dialkylaminomethyl-D,L-glutamic acids could be separated into their diastereoisomers; it was not possible to separate the isomers of γ -dialkylamino derivatives. The yields obtained in the p-nitrobenzoylation of γ -dialkylamino- and -dialkylaminomethyl-D,L-glutamic acids were considerably lower than in case of the unsubstituted glutamic acid. Characteristic IR-absorption bands and melting points of the products have been tabulated.

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USSR

UDC 547.221+661.723-16

ALEKSEYEVA, L. V., BURDE, N. L., and TATARINOVA, G. P., Institute of Chemistry, Ural Branch of the Academy of Sciences, USSR

"Synthesis and Study of Compounds With Potential Biological Activity. VII. γ -Aminomethyl Derivatives of Glutamic Acid"

Leningrad, Zhurnal Organicheskoy Khimii, Vol 7, No 7, Jul 71, pp 1396-1399

Abstract: Two synthetic methods were studied for the preparation of novel γ -aminomethyl derivatives of glutamic acid. Reaction of the diethyl ester of l-acetylaminoadipic acid with formaline and various amines gave diethyl esters of l-acetylaminoadipic acid. Catalytic reduction of these compounds carried out concurrently with hydrolysis of the protective groups by means of Clemmensen reduction yields a mixture of partially reduced and final products, from which individual compounds could not be isolated. γ -Aminomethyl-D,L-glutamic acids were synthesized by reaction of tetraethyl ester of l-acetylaminoadipic acid with paraformaldehyde and various amines followed by hydrolysis and decarboxylation of the products obtained.

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1/2 015 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--ACTION OF NITROGEN OXIDES ON BROMOLEFINS. 4. ACTION OF NITROGEN
TETROXIDE ON 2,BROMO,1,1,DIPHENYLETHYLENE -U-
AUTHOR--(02)-VASILEV, S.V., BURDELEV, O.T. **B**

COUNTRY OF INFO--USSR

SOURCE--IZV. VYSSH. UCHEB. ZAVED., KHIM. KHIM. TEKHNOL. 1970, 13(1), 73-5

DATE PUBLISHED-----70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--NITROGEN OXIDE, BROMINATED ORGANIC COMPOUND, ETHYLENE,
NITROGEN TETROXIDE, BENZENE DERIVATIVE, CHROMATOGRAPHY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRA--1992/1923

STEP NO--UR/0153/70/013/001/0073/0075

CIRC ACCESSION NO--ATO112895

UNCLASSIFIED

2/2 015

UNCLASSIFIED

PROCESSING DATE--09JCT70

CIRC ACCESSION NO--AT0112895

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A MIXT. OF 65 G 2,BROMO, 1,1,DIJ
ENYLETHYLENE IN 75 ML ET SUB2 D WITH 23.3 G N SUB2 D SUB4 IN 100 ML ET
SUB2 G AS KEPT 6 HR AT 10DEGREES, WASHED WITH H SUB2 D, ET SUB2 D
REMOVED, 100 M H SUB2 D ADDED, AND THE MIXT. REFLUXED 4 HR TO GIVE
4PERCENT 1,1,DINITRO,2,2,DIPHENYLETHYLENE (I), M. 141.5-2.0DEGREES,
(ETOH), AND 49.5PERCENT 1,BROMO,1,NITRO,2,2,DIPHENYL,ETHYLENE (II).
CHROMATOOG. OF THE MOTHER LIQUORS GAVE 3PERCENT I, 15PERCENT II,
14PERCENT 1,NITRO,2,2,DIPHENYLETHYLENE, M. 88-88.5DEGREES, 5PERCENT PH
SUB2 CO, M. 48.5-49DEGREES, AND 2PERCENT PH SUB2 C(ND SUB2) CO SUB2 H,
M. 139-40DEGREES. FACILITY: MOSK. INST. TONKDI KHIM. TEKHNOL.
IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

USSR

UDC 533.6.011.55:541.124

BURDEL'NYY, A. K., MINOSTSEV, V. B., Moscow

"Calculation of the Supersonic Region of a Three-Dimensional, Nonequilibrium Air Flow Over Bodies"

Moscow, Mekhanika zhidkosti i gaza, No. 5, Sep/Oct 72, pp 124-129

Abstract: Supersonic, nonequilibrium, three-dimensional flow over bodies when there is a plane of flow symmetry present is considered. All flow parameters in the shock layer are assumed given up to a certain surface of the three-dimensional type, i.e., a surface at each point of which the velocity component normal to it is greater than the local frozen velocity of sound. The flow of nonequilibrium gas is consequently investigated only in the purely supersonic region of the flow. Molecular transfer processes are neglected. A sample of a calculation of nonequilibrium air flow over a segmented body is given. It is noted that there has been previously only one published study on the calculation of nonequilibrium three-dimensional gas flow in the supersonic region. This paper investigated the effect of nonequilibrium dissociation in the flow around blunt reverse cone in a supersonic

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USSR

BURDEL'NYY, A. K., MINOSTSEV, V. B., Mekhanika zhidkosti i gaza, No. 5, Sep/Oct 72, pp 124-129

oxygen flow. Pictures of the flow in the distribution of flow lines between the surface of the body in the shock wave and the supersonic region show a different character of the flow from the leeward and windward sides of the flow. On the windward side of the flow the shock wave is very close to the surface of the body and the entire gas flow entering the shock layer in the subsonic flow region close to the curvature and a region of fans of rarefaction waves occurs. The flow temperature then drops sharply leading to freezing of the physicochemical processes and a decrease in their energy contribution to zero. The flow picture is somewhat different from the leeward side. The flow lines passing through the high-temperature region and consequently along which physicochemical processes arising in the flow lead to a considerable change in the composition occupy a considerably greater portion of the shock layer.

2/2

USSR

UDC 621.643.25

BURDENKOVA, Z. M., SHMURNOV, A. Ye., SHAPOSHNIKOV, A. P., and PANASYUK, V. S., Scientific Research Institute of Concrete and Reinforced Concrete (NIIZhB)

"Scientific Characteristics of High-Pressure Abrasion-Resistant Rock-Concrete Pipe"

Moscow, Stroitel'stvo Truboprovodov, No 9, Sep 73, pp 15-17

Abstract: A new construction of abrasion-resistant high-pressure rock-concrete pipes, 5300 mm long, ID=1500 mm, OD=2500 mm, is in development by NIIZhB. In order to determine the strength of these pipes and their agreement with theoretical calculations, first were tested for strength at inner hydrostatic pressure and at outer load specimens of rock-concrete bushings for pipe cores. In determining their supporting power by the bending moment $M = P \cdot r_m / \sigma$, where P =linear concentrated force in kg.cm/m and r_m =radius to middle wall thickness, the specimens were considered as thin wall structures ($h/D \leq 1/10$). Their derived deformation curves at outer load show that the rock-concrete material works within the elastic limit up to the development of cracks. A separate testing of the reinforcement revealed that in determining

1/2

USSR

BUARDENKOVA, Z. M., et al., Stroitel'stvo Truboprovodov, No 9, Sept 73,
pp 15-17

the strength of reinforced rock-concrete pipes their resisting force can be taken only 10-15 % of their tensile strength. The characteristics of industrially manufactured rock-concrete pipes are indicated and recommendations are given to favor their introduction in practice.

2/2

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1/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--SYNTHESIS AND ANTIMICROBIAL ACTIVITY OF AMMONIUM DERIVATIVES OF
CYCLOHEXANE -U-
AUTHOR-(04)-UDOVITSKAYA, V.V., LOPUSHANSKIY, A.I., PALIY, G.K., BURDENYUK,
I.P.
COUNTRY OF INFO--USSR **B**
SOURCE--KHIM.-FARM. ZH. 1970, 4(1), 17-20
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BACTERIOSTASIS, AMMONIUM COMPOUND, CYCLOHEXANE, CHEMICAL
SYNTHESIS, STAPHYLOCOCCUS AUREUS, ESCHERICHIA COLI

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1993/0313 STEP NO--UR/0450/70/004/001/0017/0020
CIRC ACCESSION NO--AP0113242
UNCLASSIFIED

2/2 020

UNCLASSIFIED

PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0113242

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. HALOACETATES (IA) OF SUBSTITUTED CYCLOHEXANOLS, XCH SUB2 CD SUB2 R, WERE PREPD. BY THE METHOD OF CONRAD (1877) AS FOLLOWS (R, X, B.P.-MM, PERCENT YIELD, N PRIME20 SUBD, AND D PRIME20 REPORTED): (SHOWN ON MICROFICHE). ALL THE QUATERNARY SALTS PREPD. WERE TESTED IN VITRO AGAINST STAPHYLOCOCCUS AUREUS AND ESCHERICHIA COLI. FACILITY: CHERNOVITS. MED. INST., CHERNOVTSY, USSR.

INITIALS

USSR

UDC 619.616.42-075:636.4

MURATOV, S. I., BURDEYNNY, V. V., Ivanovo Agricultural Institute, KISELEV, Yu. T., Ivanovo Oblast Veterinary Laboratory, and ZAV'YALOV, N. D., Vladimir Oblast

"The Serum Ring Test in the Diagnosis of Brucellosis in Swine"

Moscow, Veterinariya, No 11, 1972, pp 61-62

Abstract: Muratov's serum ring test (SRT) can detect the presence of brucellosis in a herd of animals within a few hours. Early studies showed it to be effective in diagnosing the disease in buffalos, reindeer, and mink. This report reveals that the test is specific when applied to swine serum. The results of the SRT test were compared with those of the agglutination and complement-fixation tests performed on blood samples from 424 swine (115 on 2 affected farms and 309 on 10 healthy farms). The positive results of the SRT coincided with those of the other tests only in the case of animals on the affected farms. The reactions were negative in the case of animals on the healthy farms.

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- 90 -

USSR

UDC 681.39.056

B
BURDIN, N. M., YARUSHEK, V. Ye.

"Statistical Synthesis of Logical Plans for Pattern Recognition"

Avtomatika i Telemekhanika, No. 2, 1970, pp. 57-60

Abstract: A method is suggested for construction of a logic circuit designed for pattern recognition on the basis of observable coordinates (signs), represented as binary codes. The circuit is constructed of logic elements and has n inputs and N outputs. It is required that the solution be optimal in the sense of one of the statistical criteria. The arbitrary distributions of observed coordinates for each of the patterns to be recognized are assumed known. A method is described for synthesis of optimal and near-optimal circuits in relation to the statistical criterion selected. The essence of the method is that the division of the entire set of input signals into the N nonintersecting subsets (classes), each conforming to one definite decision, is performed in the stage of synthesis of the circuit: then the system of N logic functions F_i is constructed, each function corresponding to a given decision

D_i and becoming equal to unity for code combinations of input binary variables related to the proper subset.

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BURDIN, V. I.

JPRS 55729

17 April 1972

REPETITION RATE OF RANGING SIGNALS OF DOLPHINS AS A FUNCTION
OF DISTANCE TO TARGET

[Article by V. I. Burdin, A. L. Akopian, V. I. Burdin, N. A. Zavisova and
Yu. A. Sokovych, Institute of Evolutionary Physiology and Biochemistry
I. M. Sechenov, USSR Academy of Sciences, Leningrad; Moscow, Biophysika,
Russian, Vol 17, No 1, 1972, submitted 24 September 1970, pp 139-144]

Abstract: This paper gives the results of an experimental study of the patterns of change in the repetition rate of ranging signals of a dolphin in the process of active ranging to a target (fish). It was established that the repetition rate of ranging signals during movement of the animal toward the fish varies within a certain range, at the same time retaining high values $T_0 = 2L/c$, where L is the distance from the dolphin to the target, c is the speed of propagation of sound in the water. The collected data make it possible to assume that the dolphin emits each successive ranging pulse only some time (averaging 20 msec) after the echo from the preceding pulse is received.

The ever-increasing interest in the study of dolphins is attributable to a high degree to their possession of a highly developed echo-ranging apparatus. This enables them even in the absolute darkness and with inoperative vision to detect and discriminate extremely reliably and precisely different types of food and other objects and to differentiate precisely not only the size and shape of objects, but their structure (material) as well (1-8). It is natural that the biophysical principles of the operation of the echo-ranging apparatus of the dolphin are of great interest in both evolutionary-physiological and bionic respects.

USSR

UDC 539.292.536.425

BURDIN, V. V., GRIDNEV, V. N., and MINAKOV, V. N., Institute of Metal Physics,
Academy of Sciences Ukr SSR

"Carbon Content in the Ferrite of Carbon Steels"

Kiev, Metallofizika, No 39, 1972, pp 85-88

Abstract: The change of the alpha-phase lattice parameters for rapid heating (up to 500°/sec) and cooling (up to 100°/sec) of carbon steels was studied with the use of rapid x-ray examination. Results of this work show that for rapid heating and cooling of carbon steels it is not possible to dissolve more carbon in the alpha-phase than indicated by the phase diagram for the steel. The hypothesis that the QP and GP lines on the Fe-C phase diagram can be extrapolated to values corresponding to a large carbon content is not confirmed. 4 figures. 20 bibliographic references.

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USSR

UDC 621.315.592

BLASHKU, A. I., VOLTAKS, B. I., BURDIYAN, I. I., DZHAFAROV, T. D., RZAYEV, M. A.

"Temperature and Concentration Dependencies of the Diffusion Coefficient of Zinc in Gallium Antimonide"

Leningrad, Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 467-472

Abstract: In order to exclude the concentration dependence of the diffusion coefficient in each separate sample and discover the migration mechanism of zinc in gallium antimonide, a study was made of diffusion by the isoconcentration diffusion method. The chemical diffusion of zinc in GaSb specimens alloyed with tellurium with different concentrations was also investigated.

Radioactive isotopes were used to investigate the chemical and isoconcentration diffusions of ^{65}Zn in n-type and p-type gallium antimonide alloyed with tellurium or zinc in the temperature range of 510-680° C. During chemical diffusion, the effective diffusion coefficient (D_{eff}) depends linearly on the concentration. As follows from experiments in electron transfer, zinc in gallium antimonide is shifted in the form of positive ions with an effective charge close to +1. A model is proposed for explaining the observed behavior of zinc in gallium antimonide.

During chemical diffusion, the values of D_{eff} are less than during

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BLASHKU, A. I., et al., Fizika i Tekhnika Poluprovodnikov, Vol 6, No 3, 1972, pp 467-472

isoconcentration diffusion, and with an increase in temperature, the difference in the values of D_{eff} decreases. It was proposed that the observed decrease in D_{eff} during chemical diffusion may be the result of the effect of braking internal electric fields occurring during diffusion of zinc in n-type gallium antimonide. The effect of the zinc vapor pressure on diffusion was also investigated. The diffusion mechanism is of a dissociative nature. The decrease in the effective diffusion coefficient in n-type GaSb heavily alloyed with tellurium can be connected with the effect of both electron-hole interaction and complex formation between the zinc and tellurium on diffusion [A. I. Blashku, et al., FTP, No 5, 755, 1971].

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USSR

UDC [537.226 + 537.311.33] : [537 + 535]

BURDIYAN, I. I.

"Solid Solutions of Gallium Antimonide with Cadmium, Zinc, and Mercury Tellurides"

Uzhgorod, V sb. Nekotor. voor. khimii i fiz. poluprovodnikov slozhn. sostava (Some Problems of the Chemistry and Physics of Complex Semiconductors -- collection of works), 1970, pp 190-195 (from RZh-Fizika, No 11, 1971, Abstract No 11E1056)

Translation: As a result of homogenization through prolonged smoothing with vibration and zonal equalization, with an alternating current passed through the ingots, solid solutions of GaSb with up to 20% molecular concentrations of CdTe and ZnTe and 10% HgTe are obtained. Measurements of σ and Hall emf in the 77-600° K interval showed that the solid solutions thus obtained are strongly doped semiconductors with carrier concentrations of 10^{18} - $10^{19}/\text{cm}^3$. With increasing concentrations of CdTe and ZnTe, the edge of the pass band spectrum is shifted toward the short-wave end; with increasing HgTe concentration, it is shifted toward the long-wave end. The width of the forbidden zone was calculated for each composition.

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USSR

UDC 537.311.33:535.37

BURDIYAN, I.I., MIRONOV, I.F., ROZNERITSA, YA. A.

"Recombination Radiation In Pure Gallium Antimonide"

V sb. Issled. slozhn. poluprovodnikov (Investigation Of Complex Semiconductors-- Collection Of Works), Kishinev, 1970, pp 232-234 (from RZh--Elektronika i yeye primeneniye, No 3, March 1971, Abstract No 3B317)

Translation: Single crystals were investigated of p-CaSb with a concentration of holes at room temperature $p = 7 \cdot 10^{16} \text{ cm}^{-3}$ and a mobility $U = 775 \text{ cm}^2/\text{v}.\text{sec}$; at a temperature of 80° K , $p = 2 \cdot 10^{16} \text{ cm}^{-3}$ and $U = 3000 \text{ cm}^2/\text{v}.\text{sec}$. The sole maximum of radiation (0.712 ev) at a temperature of 300° K is explained by a direct interband radiation transition. At a temperature of 80° K two maxima are discovered in the spectrum of the edge radiation which correspond to energy values of 0.801 and 0.778 ev. 1 ill. 4 ref.

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USSR

UDC 591.1.15

KONOPEL'KO, K. G., BURDIYAN, L. I., Editorial Staff of Izv. AN KirgSSR"

"Change of Nitrogen Metabolism and Enzyme Activity in the Brain and Liver of Rats With Tumors Under Ionizing Radiation"

Frunze, Izmeneniye azotistogo obmena i fermentativnoy aktivnosti v golovnom mozge i pecheni krysa-opukholenositeley pri ioniziruyushchey radiatsii (cf. English above). 1973, 17 pp, bibl. of 36 titles (manuscript deposited in VINITI 28 Feb 73, No 5551-73 Dep.) (from RZh-Biologicheskaya Khimiya, No 14, 25 Jul 73, Abstract No 14F1285 Dep by the authors)

Translation: It is shown that in the brain of tumorous animals (with RS-1 hepatoma and M-1 sarcoma) exposed to gamma rays the amide nitrogen of glutamine is a source of free ammonia. Under the effect of gamma rays in a dose of 4500 rads the content of amide nitrogen of proteins and free ammonia in the brain tissue of rats approaches the norm. In the brain of exposed animals with RS-1 hepatoma there is a noticeable increase in the concentration of free ammonia and a considerable reduction in the content of amide nitrogen of glutamine, the amide nitrogen of proteins remaining within the norm. In the brain of exposed rats with M-1 sarcoma there is a considerable increase in the quantity of free ammonia and the amide nitrogen of glutamine and proteins.

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KONOPEL'KO, K. G., et al., *Izmeneiye azotiztogo obmena i fermentativnoy aktivnosti v golovnom mozge i pecheni krys-opukholenositeley pri ioniziruyushchey radiatsii*, 1973, 17 pp, bibl. of 36 titles

It is found that under the effect of gamma rays in a dose of 2500 rads tumor growth is retarded although the tumors are not resorbed. The action of gamma rays in a dose of 4500 rads retards tumor growth and reduces the size of the tumor. In the liver of tumorous animals an increase is noted in the concentration of ammonia with a relatively constant glutamine content and a considerable reduction in the amount of amide nitrogen of proteins.

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